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Beneficial health substances from berries and minor crops –

- How to increase their concentration in cultivated species, eliminate losses in processing and enhance dietary use

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Variation of arbutin content in Bergenia sp. leaves

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Bergenia crassifolia (L.) Fritsch and B. cordifolia (Haw.) Sternb are common decorative garden perennials, but B. crassifolia is used in Russia as a medicinal plant as well. Its roots contain polyphenols, bergeninglycosides, ascorbic acid and pyrogallic compounds. The leaves contain gallicacids, arbutin and hydrochinons. The aim of the investigations was to study the seasonal variation of arbutin contens in the leaf yield and to have data on the arbutin contents of 26 Bergenia sp. accessions collected around Mikkeli.

The experimental plots were in the fields of Agrifood Research Finland, Mikkeli (61°44' N, 27°18' E). Fresh leaves were collected from 4 x 0.25 m² plots six times during 2004 in a garden plots. During 2005 29 accessions were collected from private gardens around Mikkeli, and transplanted into field plots. The arbutin content of the dried leaves and stems was determined by a HPLC analytical method, modified from the Japanese Pharmacopoeia.

During the growing season the harvested leaf biomass increased from 413 g/0.25 m² to 806 g/0.25 m² between April 29 and September 2, 2005. The calculated harvestable fresh and dry leaf yield was 1.6 –2.0 and 0.4 kg/m², respectively. The average arbutin content of the new leaf blades was 12.1-12.7 %, and that of the leave stalks was lower, 8.8 - 9.6 %. During the vegetative period, there was no big variation in the arbutin contents.

The collected accessions could be grouped into three groups. The plant height and leaf size was the highest of B. cordifolia species, but their arbutin contents were the lowest (4.90–7.02%). The arbutin content of several B. crassifolia was high (10.65–13.58%), but there were some taxonomical uncertainities. Among the garden hybrids both low and high arbutin content accessions have been found (5.99 – 13.16%). In most cases the arbutin contents of leaves were similar obtained both from the garden and open field conditions. The increasing fertilization doses had no effects on the arbutin

contents of the dry leaf yield.

Conclusion: The common garden perennial, Bergenia, should be utilized as a special new crop for raw material production in the cosmetic industry, producing arbutin. Under open field and full sun conditions, the arbutin contents of Bergenia leaves have not changed significantly. Among the collected materials there are several accessions with high arbutin contents. Additional yield and biomass data are necessary for choice of the bets accession for mass propagation and field cultivation.

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